

Title (en)  
METHOD OF FORMING SEMICONDUCTOR CRYSTAL AND SEMICONDUCTOR DEVICE

Publication  
**EP 0575965 A3 19971008 (EN)**

Application  
**EP 93109962 A 19930622**

Priority  
• JP 8683593 A 19930323  
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Abstract (en)  
[origin: EP0575965A2] A thin semiconductor film (12) having at least one edge is formed on a base (10) whose material is different from the material of the thin semiconductor film (12). A laser beam, for example, is applied to the semiconductor film so that the semiconductor film is melting including the edge thereby beading the edge upwardly. The melted semiconductor film including the edge is solidified and hence recrystallized into a semiconductor crystal. A plurality of spaced reflecting films may be formed on the thin semiconductor film before the laser beam is applied. Various semiconductor devices including a thin-film transistor, a solar cell, and a bipolar transistor may be fabricated of the semiconductor crystal. <IMAGE>

IPC 1-7  
**H01L 21/76**; **H01L 21/20**

IPC 8 full level  
**H01L 21/02** (2006.01); **H01L 21/20** (2006.01); **H01L 21/268** (2006.01); **H01L 21/336** (2006.01); **H01L 21/84** (2006.01); **H01L 27/12** (2006.01); **H01L 29/78** (2006.01); **H01L 29/786** (2006.01)

CPC (source: EP KR US)  
**H01L 21/02532** (2013.01 - EP US); **H01L 21/02686** (2013.01 - EP US); **H01L 21/20** (2013.01 - KR); **H01L 21/84** (2013.01 - EP US)

Citation (search report)  
• [X] KOBAYASHI Y ET AL: "Recrystallization of polycrystalline silicon islands on fused silica", EXTENDED ABSTRACTS OF THE 15TH CONFERENCE ON SOLID STATE DEVICES AND MATERIALS, TOKYO, JAPAN, 30 AUG.-1 SEPT. 1983, ISBN 4-930813-04-2, 1983, TOKYO, JAPAN, JAPAN SOC. APPL. PHYS, JAPAN, PAGE(S) 35 - 38, XP002035867  
• [X] SCHARFF W ET AL: "Growth of monocrystalline silicon islands on insulating substrates", THIN SOLID FILMS, 30 MARCH 1984, SWITZERLAND, VOL. 113, NR. 4, PAGE(S) 327 - 335, ISSN 0040-6090, XP002035868  
• [A] HOPPER G F ET AL: "Improvement in the thickness uniformity of silicon-on-insulator layers formed by dual electron beam recrystallization", JOURNAL OF APPLIED PHYSICS, 15 FEB. 1991, USA, VOL. 69, NR. 4, PAGE(S) 2183 - 2189, ISSN 0021-8979, XP000225203  
• [A] LEMONS R A ET AL: "Periodic motion of the crystallization front during beam annealing of Si films", APPLIED PHYSICS LETTERS, 15 AUG. 1981, USA, VOL. 39, NR. 4, PAGE(S) 343 - 345, ISSN 0003-6951, XP002035869  
• [A] PATENT ABSTRACTS OF JAPAN vol. 010, no. 289 (E - 442) 2 October 1986 (1986-10-02)

Cited by  
CN100380680C; WO0237570A3; US6642085B1; US7112846B2

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**EP 0575965 A2 19931229**; **EP 0575965 A3 19971008**; **EP 0575965 B1 20010816**; DE 69330583 D1 20010920; DE 69330583 T2 20020613; JP 3321890 B2 20020909; JP H06168876 A 19940614; KR 100250182 B1 20000501; KR 940006187 A 19940323; TW 282576 B 19960801; US 5431126 A 19950711

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